

Yellow Eggs in *Lycia hirtaria*.

By E. A. COCKAYNE, M.A., M.D., F.E.S.

An interesting paper entitled "Blue-green caterpillars: the origin and ecology of a mutation in hemolymph colour in *Colias (Eurymus) philodice*" was published in the *Journal of Experimental Zoology*, vol. XXXIV., pp. 385-412. In this Professor J. H. Gerould related his discovery of a blue-green form of larva, which behaved as a Mendelian recessive to the normal, and owed its peculiar colour to the absence of xanthophyll in the haemolymph. In the normal larva both xanthophyll and chlorophyll are present, having been absorbed unchanged from the tissues of the plants they feed on. These pigments remain unaltered in the pupa and imago and are transmitted to the eggs. Blue-green eggs containing chlorophyll alone were laid by the imagines bred from the abnormal larvae. After reading this paper I remembered that many years ago I had seen yellow and orange eggs laid by some females of *Lycia hirtaria* and *Ithysia lapponaria*, and wondered whether their colour was due to the absence of chlorophyll. It seemed possible that they were complementary to Professor Gerould's *Colias* larvae, and that in these geometers there existed a form, which either failed to absorb chlorophyll or destroyed it in the alimentary mucosa or elsewhere and so possessed a haemolymph containing xanthophyll alone. In 1922 a hundred females of *hirtaria* were collected from the London squares, in which I found my former ones. Some had paired, but many were virgin, and these were fertilised in captivity.

Each female was placed in a separate box, and the ones found still paired or virgin were carefully labelled. All of the ones, which I was certain had laid no eggs before capture, started by laying green eggs. Eleven females, which began by laying deep green eggs, finished by laying pure yellow ones. In some the change was abrupt, but in others the transition was gradual, and the eggs became less and less green until pure yellow ones appeared. One laid about 200 very pale greenish-yellow eggs, three laid quite 200, and another about 100 pure yellow ones.

The last eggs of one female were a clear deep orange colour. One female laid nothing but yellow ones to the number of 210, but may have laid some before capture. These were kept for my experiment. The females of the F 1 generation all laid green eggs and a cross pairing was obtained, but many of the resulting larvae soon died. Only 13 females of the F 2 generation were bred, and all laid green eggs. Had the form with yellow eggs been a recessive, and had the F 1 generation been heterozygous for egg-colour, there should have been one homozygous female laying yellow eggs to three laying green eggs. Three of my females in this case would have laid yellow eggs. The number bred is too small to allow of a certain deduction, but the probability is that the yellowness of the eggs in this female was not hereditary, but that it started by laying green eggs like the others.

About 10% of my females ended by laying yellow eggs, and Mr. Robert Adkin recorded the same phenomenon in the *Entomologist*, 1892, vol. XXV., p. 129, so that it is not at all unusual in this species. I am unable to suggest a satisfactory explanation. It does not seem likely that the chlorophyll in the haemolymph is all used up before

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the last eggs are laid, and that these in consequence contain nothing but xanthophyll. The number of yellow eggs laid by some females appears too large for this to be the case, and in others the change from green to yellow seems to be too sudden.

In the female, which laid paler and paler eggs as she proceeded, the alteration may have been due to deficiency of both pigments, because even the last were tinged with green. But the yellow and orange eggs seem to be quite devoid of chlorophyll.

It would be interesting to know whether their colour is really due to xanthophyll, or whether the chlorophyll undergoes a chemical change into a yellow or orange pigment. Owing to the small amount of pigment available it would be difficult to demonstrate its nature even by using the micro-spectroscopic method, but until this has been done further speculation is useless.

Euplectus decipiens, Raffr., a species of Coleoptera new to the British List.

By HORACE DONISTHORPE, F.Z.S., F.E.S., ETC.

On May 25th, 1924, Mr. Collins and I were collecting in a damp place at Yarnton, near Oxford, and when sifting moss from an old tree-stump I captured a rather large *Euplectus*, which Mr. Collins at once recognised as the same species taken by himself near this locality in 1922. He told me it was a new species, and not known to the British list. I therefore sent my specimen to my friend Major Sainte Claire Deville, who returned it as *Euplectus decipiens*, Raffray, with the remark: "Détermination certaine." As the synonymy, etc., of many of the species of *Euplectus* is considerably mixed, it seems best to give a translation in full of the description of the insect in question which occurs in Raffray's revision of the Palaearctic species of *Euplectus* (1910).

"*F. decipiens*, nom. nov. *duponti*, ♂ Reitter, *Verh. Zool. bot. ges. Wien.*, 1881, p. 524—Ganglbauer *Käf. Mitteleur.*, 2, 1895, p. 785. Pl. 2, fig. 1, 2.

Elongate subparallel, slightly convex, reddish ferruginous; legs and antennae lighter, somewhat shining, pubescence fine and sparse. Head large, as long as broad and not broader than the thorax, noticeably contracted in front; front squarely truncate, in the form of a pad "or cushion," ("en bourrelet"); anterior angles well marked, but little raised, bearing a fairly strong fossette; sides oblique; temples rounded; posterior border arcuately impressed and very finely carinate in the centre; frontal furrows deep and enlarged in the centre, reaching the fossettes of the anterior angles; two, not broad but deep, fossettes on the vertex, joined to the frontal furrow by two furrows slightly arched and well marked; the whole head covered with a puncturation slightly varying according to sex; not deep but close together, and alittle irregular. Eyes fairly large. Antennae medium, moniliform; joints 9-10 slightly transverse, 11 fairly large, ovoid. Prothorax not broader but a little longer than the head, almost hexagonal, sides rounded except a little in front of the middle, and very feebly sinuate at the height of the lateral fossettes, which are large and slightly oval, the central fossette is large; transverse, *accentriformé* (of the form of an inverted v), i.e., like a circumflex accent; the transverse furrow is obliterated between the central and lateral fossettes; discoidal furrow abbreviated and a little more marked in front, becoming narrower behind to rejoin the central fossette; sides crenulate; puncturation much finer, and above all more sparse than on the head. Elytra longer than broad, sides nearly straight and parallel; shoulders scarcely dentate; three basal fossettes, the external one large; dorsal striae reaching the middle; puncturation very fine